

**LISTING OF CLAIMS**

The following listing of claims should be entered to replace all prior listings of the claims in this application. In accordance with Rule 121, the status of each claim is indicated parenthetically. As can be seen in this listing, claims 137 and 145 have been amended. Claims 1-44 and 52-135 have been cancelled. Claims 45-51 and 136-145 remain in the application. Each amendment is believed to have been made in accordance with Rule 121, however, should any unintended informality exist, it is requested that the undersigned be contacted by telephone so that it may be resolved as expediently as possible.

1-44 (Cancelled)

45 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination comprising the steps of:

- a. obtaining equine sperm cells from a male of a species of equine mammal;
- b. staining said equine sperm cells to allow differentiation based upon a sex characteristic;
- c. establishing a cell source which introduces said equine sperm cells which have been stained into a sheath fluid;
- d. forming droplets in said sheath fluid;
- e. entraining said equine sperm cells which have been stained in said droplets;
- f. differentiating between said equine sperm cells entrained in said droplets based upon said sex characteristic;
- g. separating said droplets based upon said sex characteristic of said equine sperm cells entrained;
- h. establishing a skim milk solution into which said droplets separated based upon said sex characteristic of said equine sperm cells entrained are collected;

- i. collecting viable equine sperm cells separated based upon said sex characteristic in said skim milk solution;
- j. establishing an equine artificial insemination sample containing at least some of said viable equine sperm cells separated based upon said sex characteristic which are capable of fertilizing at least one egg within a female of said species of equine mammal.

46 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 45 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected comprises the step of establishing a solution containing a skim milk extender as a collection fluid.

47 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 46 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected further comprises the step of establishing a solution containing about four percent egg yolk as a collection fluid.

48 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 45 wherein said sheath fluid contains a HEPES buffered medium.

49 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 45 wherein said step of separating said droplets based upon said sex characteristic of said equine sperm cells

comprises the step of sorting said droplets having said equine sperm cells entrained using a flow cytometer.

50 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 49 wherein said step of sorting said droplets having said equine sperm cells entrained using a flow cytometer comprises the step of sorting said droplets having said equine sperm cells entrained at a rate of at least nine hundred viable equine sperm cells per second.

51 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 49 wherein said step of sorting said droplets having said equine sperm cells entrained comprises the step of operating said flow cytometer at a pressure of at least about fifty pounds per square inch.

52-135 (Cancelled)

136 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 45 wherein said equine artificial insemination sample is selected from the group consisting of: an equine artificial insemination sample of no more than about five million equine sperm cells, and an equine artificial insemination sample of no more than about twenty-five million equine sperm cells.

137 (Currently Amended)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 45 wherein said equine artificial insemination sample has a volume selected from the group consisting of : 0.2 ml, ~~and 1 ml~~ and 1 ml.

## 138 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination comprising the steps of:

- a. obtaining equine sperm cells from a male of a species of equine mammal;
- b. staining said equine sperm cells to allow differentiation based upon a sex characteristic;
- c. establishing a cell source which introduces said equine sperm cells which have been stained into a sheath fluid;
- d. forming droplets in said sheath fluid;
- e. entraining said equine sperm cells which have been stained in said droplets;
- f. differentiating between said equine sperm cells entrained in said droplets based upon said sex characteristic;
- g. separating said droplets based upon said sex characteristic of said equine sperm cells entrained at a rate of at least nine hundred viable equine sperm cells per second;
- h. establishing a skim milk solution into which said droplets separated based upon said sex characteristic of said equine sperm cells entrained are collected;
- i. collecting viable equine sperm cells separated based upon said sex characteristic in said skim milk solution;
- j. establishing an equine artificial insemination sample containing at least some of said viable equine sperm cells separated based upon said sex characteristic which are capable of fertilizing at least one egg within a female of said species of equine mammal.

## 139 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected comprises

the step of establishing a solution containing a skim milk extender as a collection fluid.

140 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 139 wherein said step of establishing a skim milk solution into which said equine sperm cells are collected further comprises the step of establishing a solution containing about four percent egg yolk as a collection fluid.

141 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said sheath fluid contains a HEPES buffered medium.

142 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said step of separating said droplets based upon said sex characteristic of said equine sperm cells further comprises the step of sorting said droplets having said equine sperm cells entrained using a flow cytometer.

143 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 142 wherein said step of sorting said droplets having said equine sperm cells entrained comprises the step of operating said flow cytometer at a pressure of at least about fifty pounds per square inch.

144 (Previously Presented)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said equine artificial

insemination sample is selected from the group consisting of: an equine artificial insemination sample of no more than about five million equine sperm cells, and an equine artificial insemination sample of no more than about twenty-five million equine sperm cells.

145 (Currently Amended)

A method of establishing an equine artificial insemination sample for equine artificial insemination as described in claim 138 wherein said equine artificial insemination sample has a volume selected from the group consisting of : 0.2 ml, ~~and 1 ml~~ and 1 ml.